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May 5, 1842.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

Henry Frederic Link, Dr. G. S. Ohm, Jean Victor Poncelet, and Henry Rose, were severally elected Foreign Members of the Society.

George Hunsley Fielding, M.D., and John Jesse, Esq., were balloted for and duly elected into the Society.

The reading of a paper, entitled, "Sixth Letter on Voltaic Combinations," addressed to Michael Faraday, Esq., D.C.L., F.R.S., Fullerian Professor of Chemistry in the Royal Institution of Great Britain, &c., by John Frederic Daniell, Esq., Foreign Sec. R.S., Professor of Chemistry in King's College, London, was resumed and concluded.

The purport of this letter is to follow the consequences of the law of Ohm, and the expressions which result from it, relative to the electromotive force, and to the resistances in the course of a voltaic circuit; to apply this theory to the verification of the conclusions which the author had formerly deduced from his experiments; and to suggest additional experiments tending to remove some obscurities and ambiguities which existed in his former communications. In following out these principles, the author is led to offer various practical remarks on the different forms of voltaic batteries which have been proposed with a view either to the advancement of our theoretical knowledge of the science, or to the service of the arts. The author enters more particularly into an explanation of the principles on which the cylindric arrangement of the battery he has introduced is founded, which appear to him to have been greatly misunderstood. The formulæ and the calculations which form the body of this paper are not of a nature to admit of being reported in the present abstract.

A paper was also read, entitled, "On Fibre:" additional observations. By Martin Barry, M.D., F.R.S., Lond. and Ed.

On examining coagulating blood, the author finds that it contains discs of two different kinds; the one comparatively pale; the other, very red. It is in the latter discs that a filament is formed; and it is these discs which enter into the formation of the clot; the former, or the pale discs, being merely entangled in the clot, or else remaining in the serum. He thinks that the filament escaped the notice of former observers, from their having directed their attention almost exclusively to the undeveloped discs which remained in the serum, and thus conceived that the blood-discs are of subordinate importance, and are not concerned in the evolution of fibrin.

To render the filament distinctly visible, Dr. Barry adds a chemical reagent capable of removing a portion of the red colouring matter, without altogether dissolving the filament. He employs for

this purpose chiefly a solution of one part of nitrate of silver in 120 parts of distilled water; and sometimes also the chromic acid. He admits that the use of these reagents would, on account of their destructive tendency when concentrated, be objectionable as proofs of the absence of any visible structure; but as the point to be proved is that a certain specific structure does exist, he contends that the same appearance would not equally result from the chemical actions of reagents so different as are those of chrome and the salts of mercury and of silver. After the appearance of the filament, thus brought to light, has become familiar to the eye, it may be discerned in the blood-discs, when coagulation has commenced, without any addition whatever. Those blood-discs of the newt, which contain filaments, often assume the form of flask-like vesicles, the membranes of which exhibit folds, converging towards the neck, where, on careful examination, a minute body may be seen protruding. This body is the extremity of the filament in question, its protrusion being occasionally such as admit of its remarkable structure being recognised.

The author proceeds to describe various appearances which he has observed in the coagulum of the blood, and which strongly resemble those met with in the tissues of the body, and are obviously referable to a similar process of formation. He bears testimony to the accuracy of the delineations of coagulated blood given by Mr. Gulliver. One of the most remarkable phenomena discovered by the author in the coagulation of the blood is the evolution of red colouring matter; a change corresponding to that which he had previously observed to take place in the formation of the various structures of the body out of the corpuscles of the blood. He considers the production of filaments as constituting the essential circumstance in coagulation.

He conjectures that the notched or granulated fibres noticed in the blood by Professor Mayer, may have been of the same kind as the flat, grooved, and compound filaments described by himself; but he thinks that, in that case, Mayer's explanation of their mode of origin must be erroneous; for they may be seen to be produced by a portion of the blood not mentioned by him, namely, the corpuscles.

Mr. Addison's discovery of globules in the uppermost stratum of inflammatory blood, and of their influence in the formation of the buffy coat, is confirmed by Dr. Barry, who remarks that these globules are altered red blood-discs. That the blood corpuscles are reproduced by means of parent-cells, as suggested by Mr. Owen and by the author, is confirmed by the observations of Dr. Remak; but the author had long ago indicated a division of the nucleus as being more particularly the mode of reproduction, not only of those corpuscles, but of cells in general. With this conjecture the observations of Remak on the blood-corpuscles of the foetal chick fully accord. Whether the author's further speculation, namely, that the parent-cells are altered red blood-discs, is correct, still remains to be seen.

The phenomenon of the "breaking off short," or notching of the fasciculus of a voluntary muscle in a transverse cleavage of the fibre, is regarded by Dr. Barry as a natural consequence of the interlacing of the larger spirals, which he has described in a former paper; the fracture, in proceeding directly across the fasciculus, taking the direction in which there is least resistance.

The position of the filament in the blood-corpuscle is represented as bearing a striking resemblance to that of the young in the ovum of certain intestinal worms, the filaments of which are reproduced by spontaneous division. The author subjoins the following quære, "Is the blood-corpuscle to be regarded as an ovum?"

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May 12, 1842.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

The following papers were read, viz.—

1. "Barometrical Observations, showing the effect of the Direction of the Wind on the Difference between distant Barometers." By Lieut.-Colonel Philip Yorke, S. F. Guards. Communicated by Lieut.-Colonel Sabine, R.A., F.R.S., &c.

The author institutes a comparison between the barometric heights as observed at the Apartments of the Royal Society, and at his house in Herefordshire, in the neighbourhood of Ross, with a view to ascertain the influence of prevailing winds on the atmospheric pressure. The barometers thus compared together were of the same construction, and by the same maker; and the times of observation, namely nine o'clock A.M. and three o'clock P.M., were the same at both places, the distance between which is 110 miles in longitude, and about 20 in latitude. The degree of accordance in the march of the two barometers is exhibited by that of curves traced on three sheets accompanying the paper. The results are given in eight tables. The author agrees with Schubler in ascribing the currents prevailing in the atmosphere to the variable relations of heating and cooling which obtains between the Atlantic Ocean and the continent of Europe at different seasons; the facts ascertained by the series of observations here presented being in accordance with that hypothesis. If the northerly and westerly winds in England be partly the effect of the expansion of the air on the continent, then the barometer which is nearest to the continent, or in this instance that at London, ought to be relatively more depressed than the one more distant; or if the southerly and easterly winds be regarded as proceeding to the ocean, then, for a similar reason, the barometer nearest to the ocean ought to be relatively depressed; and that both these effects are produced, is shown by the tables. This view of the subject also, the author remarks, is corroborated by Raymond's observations, detailed in his memoir on the determination of the height of Clermont Ferrand, from which it appears that with the north winds, the